REMARKS

The Official Action mailed June 30, 2003, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on October 14, 1999, April 9, 2001, March 21, 2002, and September 20, 2002. A further IDS is submitted herewith and consideration of this IDS is respectfully requested.

Concerning the Information Disclosure Statement filed December 12, 2001, Applicants' attorney gratefully acknowledges the telephone conference granted by Examiner Diaz. In that telephone conference, it was agreed that Examiner Diaz would consider the Information Disclosure Statement filed December 12, 2001. An *Interview Summary* confirming this agreement was mailed September 25, 2003. Accordingly, the Applicants respectfully request that the Examiner provide a copy of the initialed Form PTO-1449 evidencing consideration of the IDS filed December 12, 2001.

Claims 15-24, 28, 30-115 and 123-171 were pending in the present application prior to the above amendment. New claims 172-176 have been added to recite additional protection to which the Applicants are entitled. Accordingly, claims 15-24, 28, 30-115 and 123-176 are now pending in the present application, of which claims 15, 17, 20, 22, 28 and 30-35 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action rejects claims 15-24, 30, 32-34, 36, 38-40, 42-44, 46-52, 60-80, 88-115, 130-136 and 144-164 as anticipated by either JP 10-135469 to Yamazaki et al. or U.S. Patent Application Publication No. US2002/0100937 to Yamazaki et al. The Applicants respectfully traverse the rejection because the Official Action has not established an anticipation rejection.

As stated in MPEP § 2131, to establish an anticipation rejection, each and every element as set forth in the claim must be described either expressly or inherently in a

single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Applicants respectfully submit that an anticipation rejection cannot be maintained against the independent claims of the present invention. Either Yamazaki '469 or '937 does not teach all the elements of the independent claims, either explicitly or inherently.

Independent claims 15, 17, 28, 30, 31, 34 and 35 recite that asperities of a surface of a crystalline semiconductor thin film are formed by a laser light, and that the asperities are flattened by either heat treatment or heating. The Official Action asserts that either Yamazaki '469 or '937 teaches the feature of the present invention recited above citing paragraphs [0109]-[0122] of Yamazaki '469 or paragraphs [0134]-[0147] of Yamazaki '937 (pages 3-10, Paper No. 31). However, Yamazaki '469 and '937 do not teach the above feature. The Applicants respectfully submit that either Yamazaki '469 or '937 does not teach that asperities of a surface of a crystalline semiconductor thin film are formed by a laser light, and that the asperities are flattened by either heat treatment or heating, either explicitly or inherently.

Independent claims 32 and 33 recite that a crystallized semiconductor film is heated in a reducing atmosphere to form a flattened surface of the crystallized semiconductor film. The Official Action asserts that either Yamazaki '469 or '937 teaches the feature of the present invention recited above citing paragraphs [0213]-[0214] of Yamazaki '469 or '937 (pages 5 and 10, Id.). However, Yamazaki '469 and '937 do not teach the above feature. At best, Yamazaki '469 and '937 disclose a heat treatment in an atmosphere containing halogen. However, Yamazaki '469 and '937 do not teach flattening a semiconductor film. Therefore, the Applicants respectfully submit that either Yamazaki '469 or '937 does not teach that a crystallized semiconductor film is heated in a reducing atmosphere to form a flattened surface of the crystallized semiconductor film, either explicitly or inherently.

Furthermore, claim 32 recites etching a surface of a crystallized semiconductor film after an irradiation of a laser light to remove oxide therefrom, and claim 33 recites treating a crystallized semiconductor film with hydrofluoric acid after an irradiation of a

laser light to remove an oxide therefrom. The Official Action asserts that either Yamazaki '469 or '937 teaches the feature of the present invention recited above citing paragraphs [0085] and [0213] of Yamazaki '469 or paragraphs [0064] and [0213] of Yamazaki '937 (pages 5, 9 and 10, Id.). However, Yamazaki '469 and '937 do not teach the above feature. The Applicants respectfully submit that either Yamazaki '469 or '937 does not teach either etching a surface of a crystallized semiconductor film after an irradiation of a laser light to remove oxide therefrom, or treating a crystallized semiconductor film with hydrofluoric acid after an irradiation of a laser light to remove an oxide therefrom, either explicitly or inherently.

Independent claims 15, 17, 20, 22 and 28 recite carrying out a heat treatment in a reducing atmosphere after an irradiation of either a laser light, an ultraviolet light or an infrared light. The Official Action asserts that either Yamazaki '469 or '937 teaches the feature of the present invention recited above citing paragraphs [0064], [0084] and [0211] of Yamazaki '469 or paragraphs [0067] and [0084] of Yamazaki '937 (pages 3-5 and 7-9, Id.). However, Yamazaki '469 and '937 do not teach the above feature. It appears that the heating step of Yamazaki '469 and '937, which is carried out in an atmosphere containing a halogen element and shown in Fig. 1D, takes place after patterning a semiconductor film and forming a gate insulating film 111, not after an irradiation of either a laser light, an ultraviolet light or an infrared light. Therefore, the Applicants respectfully submit that either Yamazaki '469 or '937 does not teach carrying out a heat treatment in a reducing atmosphere after an irradiation of either a laser light, an ultraviolet light or an infrared light, either explicitly or inherently.

New dependent claims 172-176 have been added to better recite the features of the present invention. Specifically, claims 172-176 recite patterning the crystalline semiconductor thin film into at least one semiconductor layer after the second heat treatment, and forming a gate insulating film on the semiconductor layer.

Since either Yamazaki '469 or '937 does not teach all the elements of the independent claims, either explicitly or inherently, an anticipation rejection cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 102(b) and (e) are in order and respectfully requested.

The Official Action rejects claims 28, 31, 35, 37, 41, 45, 53-59, 81-87, 123-129, 137-143 and 165-171 as obvious based on the combination of Yamazaki '469 and U.S. Patent No. 5,403,772 to Zhang et al. The Applicants respectfully traverse the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

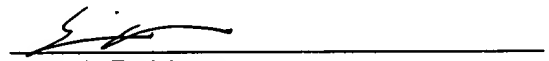
Zhang does not cure the deficiencies in Yamazaki '469. The Official Action relies on Zhang to allegedly teach the use of "hydrogen or nitrogen as a reducing atmosphere" (pages 12-14, Id.). Yamazaki '469 and Zhang, either alone or in combination, do not teach or suggest either that asperities of a surface of a crystalline semiconductor thin film are formed by a laser light, and that the asperities are flattened by either heat treatment or heating (claims 28, 31 and 35); or carrying out a heat treatment in a reducing atmosphere after an irradiation of either a laser light, an ultraviolet light or an infrared light (claim 28). Since Yamazaki '469 and Zhang do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are in order and respectfully requested.

The Official Action provisionally rejects claims 15-24, 28, 30-115 and 123-171 under the doctrine of obviousness-type double patenting over claims 1-18 of co-pending application Serial No. 09/894,125 to Yamazaki et al., and claims 15, 16, 20, 21, 28, 30-115 and 123-171 under the doctrine of obviousness-type double patenting over claims 1-77 of co-pending application Serial No. 10/081,767 to Yamazaki et al., in view of U.S. Patent No. 5,907,770 to Yamazaki et al. In response, the Applicants respectfully request that the double patenting rejections be held in abeyance until an indication of allowable subject matter is made in either the present application or the copending applications. At such time, the Applicants will respond to any remaining double patenting rejections.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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